Amendments to the Claims

1. (*Currently Amended*) A frequency-domain decision feedback equalizer device for single carrier modulation, preferably for use in a broadband communication system, including

a first section comprising:

~~[[-]]~~a fast Fourier transforming means for performing a fast Fourier transformation on a first vector of signals inputted into said first section, and outputting a second vector of signals,

~~[[-]]~~a feed forward equalization means for performing a feed forward equalization by multiplying each of the components of said second vector of signals with equalization parameters, and outputting a third vector of signals, and

~~[[-]]~~an inverse fast Fourier transforming means for performing an inverse fast Fourier transformation on said third vector of signals, and outputting a fourth vector of signals; and

a second section comprising:

~~[[-]]~~a feedback filter means for performing a linear filtering of a signal derived from an output signal of said second section,

~~[[-]]~~an adding means for adding the output signal of said feedback filter means to the output signal of said first section, and

~~[[-]]~~a detector means for receiving the output signal of said adding means and generating said output signal of said second section by extracting samples from the output signal of said adding means.

2. (*Original*) The device according to claim 1, wherein said feed forward equalization means is provided for generating equalization parameters adapted for minimizing the signal-to-noise ratio of the signal processed in the frequency-domain decision feedback equalizer device, preferably in the output signal of said first section.

3. (*Currently Amended*) The device ~~according to claim 1 or 2,~~ according to claim 1, wherein said feed forward equalization means is provided for generating equalization

parameters by taking into account a fast Fourier transformation estimation of a channel impulse response of the signal processed in the frequency-domain decision feedback equalizer device, preferably in the output signal of said first section.

4. (*Currently Amended*) The device ~~according to at least any one of the preceding claims,~~ according to claim 1, wherein said first section further comprises:

~~[[—]]~~ a serial to parallel converting means for converting a sequence of signals inputted into said first section to said first vector of signals, and

~~[[—]]~~ a parallel to serial converting means for converting said fourth vector of signals to a sequence of output signals of said first section.

5. (*Original*) The device according to claim 4, wherein said serial to parallel converting means is adapted to receive scalar signals.

6. (*Currently Amended*) The device ~~according to claim 4 or 5,~~ according to claim 4, wherein said signal to parallel converting means is provided to generate said first vector of signals including blocks of a predetermined number (P) of consecutive samples of the signals inputted into said first section.

7. (*Currently Amended*) The device ~~according to at least any one of claims 4 to 6,~~ according to claim 4, wherein said parallel to serial converting means and said feedback filter means are provided to output scalar signals.

8. (*Currently Amended*) The device ~~according to claims 6 and 7,~~ according to claim 6, wherein said parallel to serial converting means is provided to output a scalar signal (Y) which is constituted by consecutive blocks of a predetermined number (M) of samples, each block being built with the predetermined number (M) of samples of each block of said fourth vector of signals.

9. (*Currently Amended*) The device ~~according to at least any one of the preceding claims,~~ according to claim 1, wherein said detector means is adapted to receive and output discrete time signals.

10. (*Currently Amended*) The device ~~according to at least any one of the preceding claims,~~ according to claim 1, wherein said detector means is provided to generate said output signal.

11. (*Currently Amended*) The device ~~according to at least any one of the preceding claims,~~ according to claim 1, wherein said second section further comprises a feedback input generator means for receiving said output signal of said second section and providing an output signal which is built by consecutive blocks, each block including first a pseudo noise sequence and second a predetermined number (M) of samples from said output signal of said section, to said feedback filter means.

12. (*Currently Amended*) A receiver of a communication system using a single carrier modulation, wherein said receiver includes a frequency-domain decision feedback equalizer device ~~according to at least any one of the preceding claims.~~ according to claim 1.

13. (*Original*) A transmitter of a communication system using a single carrier modulation, for transmitting data, comprising a modulating means for organizing the data in blocks wherein each block is separated by a sequence of a predetermined signal.

14. (*Original*) The transmitter according to claim 13, wherein said sequence is fixed.

15. (*Currently Amended*) The transmitter ~~according to claim 13 or 14,~~ according to claim 13, wherein said sequence is a pseudo noise sequence.

16. (*Currently Amended*) The transmitter ~~according to at least any one of claims 13 to 15,~~ according to claim 13, wherein said predetermined signal comprises a repetition of a symbol or a repetition of a sequence of symbols.

17. (*Currently Amended*) A communication system including a transmitter ~~according to at least any one of claims 13 to 16,~~ using a single carrier modulation, for transmitting data, comprising a modulating means for organizing the data in blocks wherein each block is separated by a sequence of a predetermined signal ~~and a receiver according to claim 12.~~ and a receiver of a communication system using a single carrier modulation, wherein said receiver includes a frequency-domain decision feedback equalizer device according to claim 1.

18. (*Currently Amended*) A frequency-domain decision feedback equalizing method for single carrier modulation, preferably for use in a broadband communication system, comprising the steps of:

in a first section:

[[-]] performing a fast Fourier transformation on a first vector of signals inputted, and as a result providing a second vector of signals,

[[-]] performing a feed forward equalization by multiplying each of the components of said second vector of signals with equalization parameters, and as a result providing a third vector of signals,

[[-]] performing an inverse fast Fourier transformation on said third vector of signals, and as a result providing a fourth vector of signals, and

[[-]] providing an output signal of said first section on the basis of said fourth vector of signals; and

in a second section:

[[-]] performing a linear feedback filtering of a signal derived from an output signal of said second section, and providing a filtered signal,

[[-]] adding said filtered signal to said output signal of said first section, and providing an added signal, and

[[-]] generating said output signal of said second section by extracting samples from said added signal.

19. (*Original*) The method according to claim 18, wherein in said feed forward equalization step equalization parameters are generated adapted for minimizing the signal-to-noise ratio of the signal processed, preferably in the output signal of said first section.

20. (*Currently Amended*) The method ~~according to claim 18 or 19,~~ according to claim 18, wherein in said feed forward equalization step equalization parameters are generated by taking into account a fast Fourier transformation estimation of a channel impulse response of the signal processed, preferably in the output signal of said first section.

21. (*Currently Amended*) The method ~~according to at least any one of claims 18 to 20,~~ according to claim 18, comprising in said first section the further steps of:

[[-]] serial to parallel converting a sequence of signals inputted into said first section to said first vector of signals, and

[[-]] parallel to serial converting said fourth vector of signals to a sequence of output signals of said first section.

22. (*Original*) The method according to claim 21, wherein said serial to parallel converting step is provided to process scalar signals.

23. (*Currently Amended*) The method ~~according to claim 21 or 22,~~ according to claim 21, wherein said signal to parallel converting step is provided to generate said first vector of signals including blocks of a predetermined number (P) of consecutive samples of the signals inputted into said first section.

24. (*Currently Amended*) The method ~~according to at least any one of claims 21 to 23,~~ according to claim 21, wherein said parallel to serial converting step and said linear feedback filtering step are provided to output scalar signals.

25. (*Currently Amended*) The method ~~according to claims 23 and 24,~~ according to claim 23, wherein said parallel to serial converting step is provided to output a scalar signal (Y) which is constituted by consecutive blocks of a predetermined number (M) of samples, each block being built with the predetermined number (M) of samples of each block of said fourth vector of signals.

26. (*Currently Amended*) The method ~~according to at least any one of claims 18 to 25,~~ according to claim 18, wherein said extracting step in said second section is adapted to process discrete time signals.

27. (*Currently Amended*) The method ~~according to at least any one of claims 18 to 26,~~ according to claim 18, wherein said extracting step in said second section is provided to generate said output signal.

28. (*Currently Amended*) The method ~~according to at least any one of claims 18 to 27,~~ according to claim 18, comprising in said second section a feedback input generating step for processing said output signal of said second section and providing an output signal which is built by consecutive blocks, each block including first a pseudo noise sequence and second a predetermined number (M) of samples from said output signal of said section, to said feedback filter means.

29. (*Original*) A method for transmitting data using a single carrier modulation, comprising a modulating step for organizing the data in blocks wherein each block is separated by a sequence of a predetermined signal.

30. (*Original*) The method according to claim 29, wherein said sequence is fixed.

31. (*Currently Amended*) The method ~~according to claim 29 or 30,~~ according to claim 29, wherein said sequence is a pseudo noise sequence.

32. (*Currently Amended*) The method according to at least any one of claims 29 to 31, according to claim 29, wherein said predetermined signal comprises a repetition of a symbol or a repetition of a sequence of symbols.